

Reading Teachers First: Statewide Implementation of ePD

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Abstract: In spring 2004, more than 1,200 teachers and principals in Tennessee participated in online professional development as part of the state's Reading First grant. The opportunity also allowed the state to investigate the possibility of using online professional development to help teachers meet high-quality teacher requirements. Staff at the Appalachia Educational Laboratory (AEL) relied on internally developed instructional design standards and John Keller's ARCS model of motivational design to develop and deliver the online professional development. An evaluation was completed by The CNA Corporation. Gains shown from pre- to posttest scores indicate that the training allowed participants to make significant gains in content knowledge. Three sources of participant feedback indicate high levels of satisfaction with the content of the training modules.

Introduction

The reauthorization of the Elementary and Secondary Education Act, or the No Child Left Behind Act of 2001 (NCLB), creates opportunities and challenges for schools. One opportunity is increased funding for state-designed literacy grants through *Reading First*. With this funding, states can design and offer reading programs to improve the skills of K-3 principals and teachers, and K-12 teachers of special education. Concomitant with this opportunity is the challenge that all schools have highly qualified teachers by 2006. In order to meet this challenge, teachers can turn to college coursework or professional development. States with a significant number of rural school districts, such as Tennessee, must find nontraditional solutions to providing high-quality, research-based professional development for their educators. One such solution is online professional development.

Online professional development is a subset of distance learning in general, and as such has seen tremendous growth in terms of technologies, pedagogy, and research over the last 10 years. In the last decade, numerous colleges and universities have undertaken efforts to make all of the courses in their catalogues (both graduate and undergraduate) available online, and new virtual universities such as Phoenix University have become major degree-granting institutions. Virtual high schools have been established—either for profit or as extensions of public school offerings—in more than a dozen states. Indeed, the online professional development market has become a lucrative and competitive one. Yet, even as the market experiences this growth, the literature indicates little research that uses the “gold standard” of randomized control studies to determine the effectiveness of online professional development. Some measures used to evaluate distance learning in general include student outcomes as well as faculty and student perceptions (Ramage, 2002).

The concept of distance learning, or *e-learning*, as it is sometimes called, has received strong support from the U.S. Department of Education as one strategy for achieving several goals of NCLB. E-learning can provide greater access to high-quality professional development for teachers, paraprofessionals, and principals, as required specifically by Title II of the Act and many subsections throughout the law (e.g., Reading First, Enhancing Education through Technology). A July 12, 2002, press release entitled “Paige Touts Technology, E-Learning on

His No Child Left Behind Tour Across America” (U.S. Department of Education, 2002) and a 2004 white paper (Kleiman, 2004) distributed at the Secretary’s No Child Left Behind Leadership Summit are but two sources indicating that e-learning is supported by the U.S. Department of Education.

Background

During 2003, the Appalachia Educational Laboratory (AEL) developed a series of five online professional development modules for the state of Tennessee as part of the state’s Reading First grant. The five modules comprised a single course, *Assessment and Intervention in a Comprehensive Literacy Classroom*, which was delivered online in spring 2004 to K-3 teachers and principals, and K-12 special education teachers in 56 schools that received Reading First funding. From the state’s point of view, the opportunity allowed them to leverage federal funds to investigate online professional development as a strategy for helping teachers meet high-quality requirements.

The course was conducted from February through May of 2004. More than 1,200 teachers and principals participated in the professional development, and extensive data was collected and analyzed concerning the participants’ teaching and technology experience, content mastery, and attitudes. Data indicating impact on teaching practice and student achievement were collected and analyzed as well. Data analysis was completed by researchers at The CNA Corporation.

Building on the expertise of internal staff in face-to-face professional development as well as multimedia and online instructional design, the course was designed to provide an online experience that capitalized on the best research available for online professional development. As White (2000) relates when writing about online teaching, “Too frequently, instructors do not consider the impact of course design on student learning.” This was not the intention of the developers. Special attention was paid to the development of learning communities and to the needs of adult learners. Reading-specific content and skill acquisition were emphasized over technical skills. Guidelines for content development included internally developed instructional design guidelines as well as application of Keller’s (1987, 1999) ARCS model of motivational design.

Instructional Design Guidelines

Staff at AEL have excelled in the delivery of face-to-face professional development since the corporation’s inception 40 years ago, and have had recent successes in the development of both stand-alone and online multimedia-based professional development. Based on this experience and the work of organizations like the National Staff Development Council (NSDC, 2001), an internal work group developed instructional design guidelines that influenced the development of the online content (Table 1). These standards support corporate beliefs about professional development, regardless of delivery mode, and emphasize effective strategies such as the development of learning communities, providing sustained support over time, and acknowledging the needs of adult learners.

Table 1. *Instructional Design Guidelines*

Guideline	Description
Framework	Learners are better able to make connections and derive personal meaning from content when the design includes a framework or structure for that content.
Evidence	Adult learners look for an evidence base when they approach a new learning experience.
Relevance	Relevant content and opportunities for practical applications enhance adult motivation and learning.
Community	Learning occurs best in community.
Time	Learning occurs over time.
Learner background and preference	Effective learning designs acknowledge and accommodate the diverse backgrounds, interests, and learning styles of adults.
Activities	An appropriate balance of content structuring (presentation), personal reflection, interaction with colleagues, and hands-on or applied learning enhances adult motivation and engagement.
Assessments	Formative assessment is integral to participant learning and improving the instruction.

Completely self-paced instruction was not utilized during the implementation. This decision was reached through discussions between the state department of education and AEL, and based on a history of low completion rates for self-paced instruction. Building on the learning community metaphor, the state designated master teachers called Literacy Leaders at each school, who received training throughout the year on a variety of topics related to reading instruction and assessment. These Literacy Leaders served as facilitators for their own learning communities, creating what might be referred to as “group self-paced” instruction; that is, each community enforced its own timeline, level of participation, and acceptable levels of content mastery. The content included structures intended to guide the Literacy Leaders, such as a face-to-face and online orientation, which presented guidelines for obtaining requisite administrative and technical support, developing and keeping a timeline, and facilitating online learning.

ARCS Model

Developed by Keller (1987), the ARCS model of motivational design is widely used in the development of instruction in multiple formats (Small, 1997), including computer-based instruction and distance education (Keller, 1999). The ARCS acronym stands for Attention, Relevance, Confidence, and Satisfaction, and Keller breaks each down into three subcomponents (for an overview of components, see Small, 1997).

Based on conversations with state department of education staff and AEL staff experience delivering professional development in a public school setting, it was postulated that most course participants were busy professionals, with competing demands on their time, who may feel burdened by participating in whole-school professional development. In addition, it was surmised that many of the participants had minimal technology skills and experience. It was thought that they needed a relevant and satisfying experience that would capture their attention

and give them the confidence they needed to transfer the knowledge and skills from the online setting to the classroom.

The application of the ARCS model played out in several facets of the instructional design of the course, including the structure, chunking, and sequencing of the content; the design and implementation of the activities; and the selection of media and alternate media formats that sought to satisfy a variety of platforms, processing capacities, and connection speeds. The participants' experience and current practice were critical factors as the school-based communities reviewed findings from research, explored their own practices, and constructed new knowledge within the context of their professional learning communities. The activities in each module often followed a three-part progression in development from: 1) reflection on initial practice, to 2) exploration of new concepts, to 3) synthesis of new skills and knowledge with current practice. These activities resulted in activities or processes to apply within the school or classroom.

The content contained text, graphics, videos, and animations delivered via course management system (CMS) software called Course InSite, which was developed by Avatar Technology. Tailored for the delivery of professional development, Course InSite also supports individual professional development portfolios and customized administrative reporting, and incorporates software for threaded discussions as well as chat, e-mail, and document management features. All video and animations included low-bandwidth—and no-bandwidth—options, with a companion CD-ROM available for offline work that contained all videos, animations, worksheets, and handouts. Threaded discussion was a key feature for monitoring participation and received extra attention in the face-to-face and online orientation. Online discussions were also a key source of data for determining the degree of successful participation, as most activities required group or individual postings to the discussion list, often with reflection on postings by other members of the community.

Evaluation

The data. The tests developed for the course consist of a 68-question pretest and five posttests corresponding to the learning objectives for the five modules. Participants were also given a chance to complete an online evaluation of each training module. Web-based discussion boards were available to participants to help address questions and share advice and information on the programs. Additionally, upon completion of the professional development, Literacy Leaders participated in focus group interviews and a postprogram satisfaction survey. In this section we present findings based on analyses of these data.

Results from pre- and posttests. A total of 1,270 classroom teachers and administrators took the online modules. Of these, 693 participants completed all 68 pretest and corresponding posttest questions. Based on this sample, the average pretest score was 64%. Average pretest scores across modules ranged from 51% (module four) to 75% (module five). On average, scores improved 21 percentage points overall. The percentage point gain in posttest scores ranged from 13% to 31% across modules, with the largest gain made on module four and the

smallest on module five, indicating some equalization of pretest differences. Posttest average scores were above 80% for every module (Table 2).

Table 2. *Test Scores by Module (n=693)*

	Module 1	Module 2	Module 3	Module 4	Module 5	Total % Correct
Correct pre	63%	64%	61%	51%	75%	64%
Correct post	83%	83%	89%	82%	88%	85%
Point gain	20%	19%	27%	31%	13%	21%
Pct gain	31%	30%	45%	61%	18%	33%
N of questions	12	20	13	9	14	68

Of those reporting their race (74%), 76% were non-Hispanic Whites and 23% were Black. The vast majority of participants (81%) were female; 5% were male. Fourteen percent did not report their gender. Multivariate analysis of test score data revealed no differences among participants across groups (not shown).

We found that respondents in at-risk schools scored slightly better on the pretest (not statistically different) and similarly on the posttest to others (Table 3).

Table 3. *Raw Test Scores for At-Risk Schools*

At-Risk School	Pretest	Posttest	Gain	Observations
Yes	43.95	57.40	13.45	483
No	42.05	58.65	16.60	210

After a preliminary examination of pre- and posttest results by instructional position, we grouped findings into those for literacy staff (Literacy Leaders and reading resource teachers) and all others (classroom teachers, administrators and unknown positions). As shown in Table 4, pretest raw score averages were 7.5 points higher for literacy staff than for others (not statistically different); posttest averages for all groups were very similar.

Table 4. *Raw Test Scores for Literacy Staff and General Staff*

Literacy Staff	Pretest	Posttest	Gain	Observations
Yes	50.6	56.7	5.6	36
No	43.0	57.8	14.9	657

Results from qualitative data. Accompanying each online exam is an evaluation component gauging participants' opinions and satisfaction regarding module content, presentation, and effectiveness. These data are useful for formative assessment of the online Reading First program. In addition, they help to interpret results from the quantitative analyses presented above. Two additional, rich sources of qualitative feedback to the online program were derived from focus group interviews and surveys of Literacy Leaders in the summer following the program.

Module evaluations

Tabulations of the module evaluations indicate consistent, moderate-to-high satisfaction across the board, with nonsignificant differences between modules. Among the unstructured comments, the most frequent positive feedback was regarding module content (over 80%). The most frequent suggestions for change (38%) referred to presentation issues. One third of respondents indicated they would change nothing. The Web board postings were much less structured than the survey responses. Fully half of all postings dealt with start-up issues in module one.

Literacy Leader Surveys and Focus Groups

We found that overall satisfaction levels reported by Literacy Leaders are similar to those of the broader participants. Additionally, numerous and consistent comments arose regarding the implementation difficulties and the compressed program period. Opinions of the module content remained unambiguously positive.

Data from the Literacy Leader survey also validated two of the original assumptions of the designers: 1) the participants felt burdened in terms of time, and 2) concerns about the technology were a factor for participants (Table 5).

Table 5. Literacy Leader Survey Data Reported in Number of Responses

To what extent did you experience the following implementation issues?	Not at All	Small Extent	Moderate Extent	Large Extent
Lack of time for teachers	1	8	18	24
Lack of commitment from teachers	11	20	18	3
Lack of support from school principal	41	6	4	1
Lack of support from district administrators	40	6	5	1
Lack of support from state program administrators	46	4	2	0
Inadequate technology training for teachers	12	18	14	8
Unreliable technology	13	18	8	13
Too many other school commitments	1	19	12	20

Survey data also demonstrated that Literacy Leaders felt that while there were concerns about the online professional development at the initiation of the training, the reaction to the experience at the end was positive (Table 6). Inadequate technology training and unreliable technology appeared to be factors that persisted throughout the implementation.

Table 6. Literacy Leader Survey Data Reported in Number of Responses

To what extent do you agree with the following statements?	Strongly Agree	Somewhat Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Does Not Apply
Teachers liked the Reading First online PD program.	5	24	7	13	3	0
Teachers prefer to receive PD online.	5	18	11	14	4	0

This online PD program met the needs of new teachers.	16	20	11	2	1	1
This online PD program met the needs of experienced teachers.	13	22	10	7	0	0
At the start of the program, teacher reaction to online PD was positive.	1	12	9	19	11	0
By the end of the program, teacher reaction to the online PD was positive.	7	25	2	13	4	0
Informal conversations to discuss online PD were important to teachers' learning.	15	27	9	1	0	0
Group meetings to discuss online PD were important to teachers' learning.	12	25	12	2	1	0
The online discussion boards were important to teachers' learning.	3	16	15	15	3	0
The online PD resulted in changes in classroom practice.	1	10	11	7	1	0

Conclusions

Indications thus far are of a very successful initial implementation of the online *Assessment and Intervention in a Comprehensive Literacy Classroom*. The first such indication is found in the comparison of pretest and posttest averages for literacy staff versus regular participants. As might be expected, literacy staff scored substantially higher in the pretests, but in the posttests the other participants caught up and achieved very similar posttest scores, sometimes exceeding the Literacy Leader averages.

Related to the consistent test results is an overall satisfaction expressed regarding the content of the training modules. All three sources of participant feedback—online evaluations, threaded discussions, and focus group surveys—indicated high levels of satisfaction with the content of the training modules.

Implementation problems appeared to center around two issues: 1) the introduction of the program late in the school year and 2) technology and software difficulties, many of which were addressed as the training continued. Addressing these issues in future implementations, and developing improved means of evaluation and feedback should be priorities of the program. In addition, evaluation of longer-term retention of knowledge gains and changes in instructional practices as a result of the program would be useful.

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